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Dear US EPA:

As the Executive Director of the Eastern PA Coalition for Abandoned Mine Reclamation (EPCAMR) for the last 13 years, who has spent the majority of his time working in the Chesapeake Bay Watershed on abandoned mine reclamation, watershed restoration, environmental education, environmental action projects, stream restoration, and abandoned mine drainage remediation projects, in partnership with a myriad of organizations from the Federal, State, County, and local grassroots level, I would like to respectfully submit comments on the Pennsylvania Department of Environmental Protection's Draft Chesapeake Bay Watershed Implementation Plan (draft WIP).

EPCAMR works to provide technical and administrative support to the Conservation Districts, coordinate reclamation activities, establish a public education outreach program within the schools, and to rejuvenate local watershed groups, primarily in those areas where streams are adversely affected by abandoned mine siltation and abandoned mine drainage. EPCAMR works together with nearly 75 local groups to inform and educate the public and to organize environmental interests relative to the purpose and value of specific reclamation, remining, and remediation techniques being proposed for sites in their local community.

I am a lifelong resident of the Wyoming Valley, and am particularly knowledgeable about the past mining impacts on the water quality of the Susquehanna River and its tributaries, having an extensive background in anthracite mining geology, aquatic biology, history, and underground hydrogeology of this area. As the Executive Director of EPCAMR, I have had the opportunity for many years to Chair the PA DEP's 319 Non-Point Source (NPS) Liaison Resource Extraction Workgroup Subcommittee that updated the PA DEP and US EPA Region III on project successes, outreach efforts, new innovative treatment technologies, implementation plans, watershed assessments, and networking opportunities that were convened on a yearly basis. I am also a member of the PA DEP's Mining Reclamation Advisory Board, as an Alternate Member appointed by the State Conservation Commission and have been a technical advisor and Ad Hoc Reclamation Committee member to the full MRAB for over a decade. I also sit on the Susquehanna River Basin Commission's Water Quality Advisory Committee and have

done so for many years. A majority of EPCAMR's workload has been contained within the Susquehanna River Basin, and therefore, the Chesapeake Bay Watershed. EPCAMR Staff have assisted County Conservation Districts over the years to develop their Chesapeake Bay Tributary Implementation Strategies as well, providing statistical analyses of GIS data on stream segment impairments by cause and assisting with making recommendations on how to implement best management practices (BMPs) for those impairments, be it AMD treatment, land reclamation, agricultural impacts, stormwater runoff, streambank erosion, and riparian buffer establishment.

EPCAMR is aware that Pennsylvania's draft WIP was prepared to address the EPA's expectations for the Chesapeake Bay Total Maximum Daily Load (TMDL), scheduled for publication in December 2010. EPCAMR has reviewed many TMDL Reports for watersheds in our region and provided water quality data, field reconnaissance support, GIS Mapping assistance to staff biologists of the Susquehanna River Basin Commission, and recommendations to the PA DEP Section 319 NPS Program water pollution biologists on stream segments previously impacted by AMD for removal from the Federal List of Impaired Waters due to our analyses of water quality improvements and aquatic insect population improvements over time, as well as due to the increase in the number of AMD remediation treatment systems that were constructed to reduce the loading rates of common metals (iron, aluminum, and manganese) found in AMD to our impaired watersheds.

EPCAMR understands that the US EPA directed the states to develop a Phase 2 WIP which will further subdivide the loads by local area (county). We also understand that these will NOT be regulatory allocations to each of the counties. Rather, they are to inform local implementers (e.g. municipal elected officials and planning agency personnel, county conservation districts and planning commissions) and organizations like ours, or community watershed organizations, of the nutrient, metal, and sediment loads generated by their geographical area so we can help implement or plan appropriate actions to reduce the loads. Local implementation efforts should focus on compliance with existing rules and regulations, as well as seeking opportunities for additional management actions from EPA's standpoint. Community groups are not trying to disobey or break current or existing rules and regulations, their watersheds, rivers, and streams, are already in non-compliance, from the standpoint that they do not have clean water available to them for a multitude of uses that others enjoy across the Commonwealth in healthier watersheds with minimal impacts.

AMD is "abandoned" mine drainage. Communities are not trying to force compliance on anyone; groups like ours are trying to develop landowner relationships and agreements to allow for the construction and remediation of AMD on parcels of their properties where the discharges emanate from, for the betterment of the entire community and watershed. However, they need some protections and compensation for the perpetual loss of the use of those particular parcels for them to get on board with our recommended implementation projects. The Commonwealth of PA would be very hard pressed to force a single landowner where an AMD discharge comes to the surface and flows across their land into compliance, when the underground mine water complexes, from which the water flows could be miles away in all directions, and take in many additional landowners on the surface. That is why voluntary cooperation by landowners is of the utmost importance to our partnerships with local community groups and municipalities.

Community awareness of the problems and the potential solutions to the impacts left by past mining practices is needed in our region. Most elementary aged school children do not even know what water

pollution is. Sure they know that the streams are orange, red, and yellow, and have been told anecdotal stories by their parents or grandparents about the dangers of hanging around the local streams because of the mining impacts, but what they do not know is that they can become a part of the solution to cleaning up and restoring their own watersheds. EPCAMR has made it a point in our environmental education and outreach efforts to take school aged children and their teachers in our underserved, more impoverished, and underrepresented school districts to the streams within their local watersheds to teach them about historical mining impacts, water quality, fishery biology, stream ecology, and community volunteerism. This is where the focus should be. I've been in the schools for over a decade and you would be shocked to find that most elementary aged students do not even know the name of the Susquehanna River or their home watersheds in which they live. None of them have even heard of the Chesapeake Bay. Therefore, EPCAMR believes that a placed-based Environmental Education component should be involved in the WIP, not just loading reductions. We need increases in awareness of the problem in the communities where we want to treat the water.

EPCAMR is currently working with the SRBC to develop an Anthracite Region AMD Remediation Strategy. EPCAMR and the SRBC are in the process of developing a strategy to assist in the cost-effective restoration efforts for AMD areas by identifying watersheds where reclamation activities would result in the greatest water quality improvements. We would like to seek additional funding to develop a comprehensive Mine Pool Evaluation of the Northern and Eastern Middle Anthracite Coal Fields. By June of 2011, EPCAMR will be reporting on and completing a comprehensive underground mine pool evaluation report for the Southern and Western Middle Anthracite Coal Fields, based on best available mapping and water quality resources available. The anticipated evaluation would dovetail with the proposed remediation strategy as SRBC would be able to assess the potential for augmenting low flows during droughts and for the possible use of small-scale hydroelectric power production at selected sites to provide revenues that would help to offset treatment costs and reduce waste allocation loads. Tom Clark, AMD Coordinator for the SRBC is working side by side with EPCAMR on these two complimentary efforts and is continuing to seek additional funds to complete the work plans.

EPCAMR's geographic information system (GIS) known as the Reclaimed Abandoned Mine Land Inventory System (RAMLIS), based on PA DEP's Abandoned Mine Land Inventory System estimates that there are over 1,920 miles of AMD impacted streams on the Integrated List of Impaired waters within the Susquehanna River Basin and there are around 1,924 designated Problem Areas within the Basin that contain abandoned mine land features and polygons that total 12,706 in number and just over 86,230 acres. Around 10, 417 of those features are unreclaimed for a total of 86,232 acres, and around 2,289 features have been reclaimed for a total number of 13,144 acres within the Susquehanna River Basin alone. Between 27-29% of the Susquehanna River Basin is impaired by AMD. Over 530 miles of the impaired miles of streams are within 517 square mile drainage of the Anthracite Coal Fields.

EPCAMR believes that the focus should also be on working with the local community groups to raise the level of the segments that are impaired either by watershed or stream segment to become eligible for additional funding through other State Agency programs such as the PA DEP's Set Aside Program, under the Title IV, Surface Mining Control & Reclamation Act (SMCRA), 2006, as amended, as a Qualified Hydrologic Unit (Qualified Hydrologic Unit). Currently, throughout the Susquehanna River Basin, there are only 4 watersheds and or segments that qualify for additional Federal funding under SMCRA. For instance in Luzerne County, there is not a single watershed or stream segment that is impaired on the Federal List of Impaired Waters, formerly known as the 303 (d) List, that is eligible for

Federal funding under this Title IV Program until a QHU Plan is developed. Our organization would like to assist in the development of these QHUs, provided that future funding is made available to provide the local community watershed associations and local governments with the technical expertise and assistance that would qualify segments within their watershed boundaries or political jurisdictions for funding. EPCAMR realizes that this is a separate funding source and that historically PA Growing Greener Funding under the Watershed Environmental Stewardship Fund through the Section 319 Program has provided funding for other types of projects, including AMD assessment and remediation.

EPCAMR would like to be more actively involved with the Phase 2 WIP Implementation in partnership with the US EPA from December 2010 until 2017 and learn about the details on how it will be phased into the communities and the watersheds impacted. This involvement by EPCAMR is contingent upon being able to secure additional funding to support our full-time staff of two to continue providing the expertise and community support that we have been doing since 1997 in the NorthCentral and NorthEastern parts of PA impacted by past mining. While it's formidable that the US EPA has looked ahead towards the second stage of implementation that will extend from 2018 to 2025, when controls will be implemented to reduce loads from the interim to final target levels. EPCAMR does not have the ability to see that far into the future.

EPCAMR wants to believe that Pennsylvania is committed to protecting and enhancing our streams and watersheds and that the efforts here at home will in turn help in further restoring the Chesapeake Bay by 2025. There is no doubt in my mind that over the years, significant progress has been made to reduce nitrogen and phosphorus pollution of the local waters in the Pennsylvania watershed. EPCAMR believes that more attention needs to be paid to metal allocation loads in the tributaries of the Chesapeake Bay Watershed where the AMD impacts are. EPCAMR realizes that it is a difficult concept to understand when it comes to relating AMD to the Chesapeake Bay, but all you have to do is look at the legacy sediments and coal silt that is located behind every dam on the Susquehanna River from here to Maryland to realize that if those dams were not in place, that the coal fines, silt, acidity levels, and metals contamination would be much greater at the mouth of the Bay. In all of the Tributary Strategies developed by EPCAMR and our supporting Conservation Districts, many recommendations were made to implement strategies to remediate AMD problems in the tributaries, but not many were followed through on due to lack of funding and or lack of prioritization. More needs to be done.

Why is there not a Phase 5.3 Watershed Model for Metal Loads to the Chesapeake Bay throughout PA?

Milestone Implementation and Tracking

Is the Chesapeake Bay Model incorporating AMD Treatment systems constructed as BMPs? Are the State's abandoned mine land reclamation projects in terms of acres reclaimed and stream miles restored being added to the model? Are the reductions in loadings of metal contamination to the streams within the Chesapeake Bay tributaries for specific segments being incorporated into the model? If not, they should be. Since there is no mechanism for reporting private efforts (Anthracite Operators that are remining abandoned mine lands), private foundations such as the Foundation for PA Watersheds, or industry efforts such as Co-generation Plants that operate within the Basin under the trade association of ARIPPA (www.arippa.org).
In the Anthracite Region, we cannot thank some of our regional co-generation facilities enough for the great job they do in reclaiming abandoned mine lands. These private companies are not obstacles, they

should be considered one of the greatest assets we have in our region. Let us not forget that much of this work has been completed at no cost to the state or taxpayers. The backlog of reclamation needed for the nearly 190,000 acres of abandoned mine lands left unreclaimed in PA and over 5,500 miles of streams impacted by AMD is projected to cost more than $3,000,000,000 in PA, and that only includes the Priority 1 and Priority 2 Sites. There are still nearly 11 Million Tons of CFB-ash has being beneficially used at abandoned mine sites throughout PA. Over 2 Billion Tons of waste coal has been burned as an alternative energy fuel source in PA.

Approximately 4500 acres of waste coal piles have been reclaimed in the last 20 years. PA DEP estimates that is costs around $20,000 to clean up just one acre of abandoned mine lands. This estimate does not include the elimination of AMD that has detrimentally impacted our streams and rivers. For example, in the Wyoming Valley, Luzerne County, PA, hundreds of acres of abandoned culm banks have literally disappeared. The once dirty, ominous, abandoned mine land features that have dominated the landscape for nearly eight decades and blocked the beautiful view of the Susquehanna River from the East side of the Valley from the West, have been reclaimed utilizing coal ash for abandoned mine reclamation. People can travel the local highways and Interstate I-81 and now see clear cross the Wyoming Valley. Northampton Generating Supply Company, separated the culm, hauled it away, brought back the ash, compacted in lifts on the same site in which it came from, filled the mine voids, and reclaimed the site. It was a win-win situation. In the land beneath these culm banks, there's economic and environmental value.

Within the culm banks, there is energy to be recycled, and in the continued removal of these eyesores, EPCAMR sees great satisfaction in the reclaimed aesthetic look for Northeastern PA and across the State of PA as a whole. We should concentrate our efforts on reclamation of these undeveloped acres for social, economic, as well as environmental uses. Expanding and reconnecting our communities separated by mountains of culm, creation of open space areas, wildlife habitat enhancement, water quality improvements, improving the areas quality of life, recreational opportunities, stream restoration, and economic development of these abandoned mine lands should be of the utmost importance.

EPCAMR believes that PA has ample and effective waste disposal and management regulations already in place. It is important that we continue to support private business and industry that successfully balance economic development with environmental protection. Innovative solutions to environmental problems should be applauded, not restricted, or overly regulated. EPCAMR believes that these successes are being under reported and should be added to the Chesapeake Bay Model.

Possibly the PA DEP could fund an AMD BMP tracking pilot projects to explore the possibility of doing county "sweeps" for BMP information. It is widely known that there are over 285 AMD Treatment Systems state-wide that have been funded in part, by the Federal Office of Surface Mining and the PA DEP. What are not known collectively for the Susquehanna River Basin is the impacts and load reductions to the Chesapeake Bay from these completed systems. Each one of them is retaining metal loadings in their designed ponds that aren't reaching the streams and in some cases is being harvested and recycled by groups such as Hedin Environmental and EPCAMR. Perhaps a BMP repository can be accessed on the EPCAMR and WPCAMR websites for community groups and watershed organizations to add their projects in addition to the State and Federally funded projects. EPCAMR is well aware of the West Branch AMD Remediation Strategy developed by the SRBC and its partners, but there is no comprehensive Strategy completed as of yet to look at the AMD pollution loads

to the Susquehanna River and the Chesapeake Bay on a whole. There is also the West Branch Task Force, under the direction and leadership of Amy Wolfe-Abandoned Mine Lands Program Director for National Trout Unlimited that could also provide additional insight, data, loadings, and numbers to assist with improving the overall Chesapeake Bay Model.

New Technology and Nutrient Trading

New technologies that can create electrical generation and power from AMD should be looked at further. Several of these types of projects have been funded in Western PA, but not in the East. The Old Forge Borehole, Jeddo Mine Tunnel, Solomon's Creek Boreholes, Susquehanna #7 Outfall, and other AMD discharges with high volume flows in the other Coal Regions within the Susquehanna River Basin could potentially become income generators and opportunities for economic redevelopment.

EPCAMR has been involved with the USDA, Capital Area Resource Conservation & Development Council, Pennsylvania Environmental Council, Chesapeake Bay Foundation, Foundation for PA Watersheds, Penn-State University, Conservation Districts within the EPCAMR Region, and other partners a few years ago to locate abandoned mine lands in close proximity to the more rural farms that had excess nitrogen and manure wastes from their Concentrated Animal Operations (CAOs) and Concentrated Animal Feeding Operations (CAFOs). EPCAMR provided all of the GIS mapping for the project and conducted the research with Conservation District Chesapeake Bay Technicians to obtain the necessary information to get the totals on the number of CAOs and CAFOs in the EPCAMR Region. Composting facilities and the Co-Generation Facilities in Eastern PA were also mapped. The ***Manure and Minelands Project*** was coordinated to be able to put the farmer and the land reclamation entities together to work out some nutrient trading or business transactions that would save them time, resources, and money. Abandoned mine lands need manure because they lack topsoil for the most part and farmers need to dispose of their excess manure to avoid any pollution problems to the streams within their farmland properties. Mushroom compost, horse manure, chicken manure, all have beneficial qualities to land reclamation and AMD remediation, if mixed with the proper constituents and are not too wet. Yet another win-win.

EPCAMR worked with The Conservation Fund and the Keith Campbell Foundation for the Environment earlier this year to provide them with written examples, photographs, and project successes to inform others in the region how they can improve the environment in their communities impacted by abandoned mine lands. My co-worker, Mike Hewitt, and I provided details on project successes related to the effort mentioned in the previous paragraph to Mr. David G. Burke, President of Burke Environmental Associates, and Mr. Joel E. Dunn, Program Coordinator, for Sustainable Chesapeake-The Conservation Fund. These two individuals edited and authored the publication, entitled, ***A Sustainable Chesapeake: Better Models for Conservation*** (2010). The book can be found online on The Conservation Fund website at (www.conservationfund.org/sustainable-chesapeake). It is a way to take a look at 31 projects that summarizes the principles of sustainability illustrated by the profiles contained within each project with creativity, outside of the box thinking, a great deal of volunteer time and effort, and much needed partnerships and funding sources to make them stand out from many others around the Chesapeake Bay.

Compliance

EPCAMR realizes that construction and post-construction stormwater management is being addressed in the recently adopted revisions to Chapter 102, erosion and sedimentation regulations and that the PA DEP is also developing the next-generation general permit for Municipal Separate Storm Sewer System (MS4) communities. EPCAMR was integral to authoring a four page section of a guide book (http://www.stormwaterresourcesformunicipalities.com/) for municipalities on Stormwater Management in partnership with the Pocono NE Resource Conservation & Development Council that took into consideration the post-construction stormwater impacts on downstream areas of recently reclaimed abandoned mine lands and on not encouraging the BMP of infiltration in areas of the Coalfields that were previously mined due to the potential for creating additional abandoned mine drainage (AMD), subsurface, in areas that were previously mined. Nearly 400 copies of the guidebook were distributed by the Pocono NE RC & DC just a few years ago and are still readily available to other municipalities online.

Next steps

EPCAMR would like to be represented on the WIP workgroup in the near future, if you are looking for additional input from another organization that has already demonstrated the commitment to help protect and restore the Chesapeake Bay. We would hope to think that we are a leader in the environmental restoration of AMD impacted watersheds in Eastern PA and throughout the Chesapeake Bay Watershed.

EPA's Legal Framework for the Chesapeake Bay TMDL

EPCAMR understands that the Chesapeake Bay TMDL addresses ONLY the restoration of aquatic life uses for the Bay and its tributaries that are impaired from excess nutrients and sediment. EPCAMR has performed biological sampling on stream segments over the years where aquatic life has been restored to segments of streams that have been previously impaired by AMD and are now being restored due to the implementation of AMD remediation strategies and implementation of construction projects. Perhaps a more comprehensive biological assessment review needs to be completed in the tributaries of the Chesapeake Bay, particularly downstream of treated AMD stream segments or pollution sources. Since sediment is a major contributor to the problems within the Chesapeake Bay, the TMDL should consider that AMD in its iron hydroxide form, and in the form of fine coal silt, once it settles out on the streambed are sediments that can choke out all aquatic life, stream habitats, spawning grounds, promote algal growth, and create areas of low dissolved oxygen levels. In areas where the coal silt basins and abandoned culm banks are directly along the streambanks of some of our rivers and streams, riparian corridor establishment would help to prevent further streambank erosion and siltation into the watersheds during peak stormflows and flooding events. Air deposition to the watershed, particularly in the Northeast Region of the Basin, contribute much of the acid impaired headwater streams that lack the buffering capacity to handle the acid rain contributions from the Western Ohio and Pittsburgh Region that tends to fall over our portion of the basin. See http://www.tu.org/conservation/eastern-conservation/brook-trout/education/threats/acid-deposition for details.

Watershed Implementation Plans

EPCAMR believes that before some WIPS can be completed that watershed assessments still remain to be completed for several watersheds in the Basin. Comprehensive watershed assessments should be completed before developing implementation plans. In the last round of PA's Growing Greener, watershed assessments were not a priority for funding, and in order for them to be eligible for other types of State and Federal funds they need to be. In the Coal Region, implementation plans need to take in to consideration the underground mining hydrogeology and complex geology of the Anthracite Region before we can jump to conclusions that treating in one location is going to improve another that is tied to an underground reservoir that fluctuates temporally and seasonally with rainfall and drought conditions. Loadings will also fluctuate in this situation. EPCAMR staff has assisted the PA DEP and many of our community watershed organizations in the completion of Watershed Implementation Plans in the past.

Development of Phase 1 Watershed Implementation Plan and Public Participation

EPCAMR had been involved with many of the Conservation Districts in the development of their Chesapeake Bay Tributary Strategies and would like to continue to do so in the future implementation of the other phases. We will keep in touch with our Conservation District Chesapeake Bay Technicians within our Region to provide updates to their County Implementation Tributary Strategies.

Resource Extraction

1,575 Resource Extraction operations are within the Susquehanna River Basin according to PA DEP's eFACTs tracking system. The resource extraction activities subject to NPDES permitting in the Bay watershed include coal mining, noncoal mining and the earth disturbance related to abandoned mine reclamation activities. Oil and Gas development activities are not subject to NPDES permitting.

Coal mining permits are typically accompanied by an NPDES permit. Most coal mining permit areas include erosion and sedimentation controls that are permitted stormwater outfalls under an NPDES permit. Some coal mining activity permits include BMPs that are designed to prevent a stormwater discharge. A typical example of this is in the anthracite coal fields where new mining reaffects abandoned mine lands (AML), and all stormwater is contained in the pit. However, an unlined pit that is not compacted with a liner or bentonite clay might as well have an open conduit to the underground mine pools beneath the mining affected regions because without it, promotion of AMD is likely to occur in those areas, and an increase in the amount of groundwater reaching a subsurface mine pool complex is possible. EPCAMR encourages and supports remining of abandoned mine lands by the Anthracite Industry and other operators in the Northern Bituminous Region to reclaim additional acres of abandoned mine lands and to eliminate further generation of pyritic material and AMD from getting into our watersheds and underground mine pool complexes.

Current Programs and Capacity

Resource extraction activities and abandoned mine lands (AML) have the potential to release sediment into nearby surface waters. EPCAMR firmly believes that abandoned mine drainage (AMD) from AML can impair the ability of streams to assimilate these nutrients effectively. My reason for repeating some of the information in the draft TMDL WIP Report is so that the general public interested

in the abandoned mine issues can hone in directly on parts of the draft that could potentially impact their local watersheds, so I apologize for some redundancy, however, in this case I think it is warranted.

Reclamation methods include PA DEP's primary efforts to improve water quality through reclamation of abandoned mine lands (for abandoned mining) and through the National Pollution Discharge Elimination System (NPDES) permit program (for active mining). EPCAMR currently receives the majority of its funding for projects designed to achieve water quality benefits from the US EPA Section 319 Grant Program and Pennsylvania's Growing Greener Program. Federal funding is from the Department of the Interior's Office of Surface Mining (OSM) for reclamation and mine drainage treatment through the Appalachian Clean Streams Initiative and through Watershed Cooperative Agreements have also been a part of EPCAMR's historical funding streams to work with community groups to design, build, construct, operate and maintain AMD treatment systems within the Chesapeake Bay Watershed.

The DEP Bureau of District Mining Operations (DMO) administers an environmental regulatory program for all coal and noncoal mining activities. DEP offers remining incentives for coal mining which are geared toward reclaiming abandoned mine features and stabilizing the areas. Regulatory programs are assisting in the reclamation and restoration of Pennsylvania's land and water. DEP has been effective in implementing the NPDES program for mining operations throughout the Commonwealth. This reclamation was done through the use of remining permits that have the potential for reclaiming abandoned mine lands, at no cost to the Commonwealth or the Federal government. EPCAMR is unsure if these remining sites are being considered by the Chesapeake Bay Model, and if not, they should be.

Programmatic

The primary concept employed by the mining program in dealing with sediment issues is prevention. The permitting process provides the framework for the necessary measures, typically collection ditches and sedimentation ponds, to have effective controls. Standard BMPs are employed on most permits. Coal mining permits and large noncoal permits typically include site-specific engineered Erosion and Sedimentation control plans.

There are about 1,750 permitted mine sites in Pennsylvania in the Bay watershed. Each of these permits include Best Management Practices for prevention of erosion and sedimentation. These permits also include revegetation plans to stabilize the post-mining reclamation area. There are about 475 mining sites in the Bay watershed for which there are NPDES permits. These permits include effluent limits for suspended solid and/or settleable solids. These measures prevent contributions of sediment in the watershed.

The point of planning and permitting is to prevent increased sediment loads as the level of earth disturbance increases. Mine sites and oil and gas development sites are subject to permitting which minimizes their impact on loads. In the case of coal mining, most new mine permits include some remining where AML is reclaimed in the course of mining. While the potential impact of the earth disturbance for mining is temporary, the overall improvement (i.e. the reclamation of AML) is permanent.

Funding/Staffing

DEP BAMR, which administers the program to address the Commonwealth's abandoned mine reclamation program, has established a comprehensive plan for abandoned mine reclamation to prioritize and guide reclamation efforts for throughout the Commonwealth to make the best use of valuable funds (http://www.portal.state.pa.us/portal/server.pt/community/pennsylvania%27s_comprehensive_plan_for_abandoned_mine_reclamation/13964). In developing and implementing a comprehensive plan for abandoned mine reclamation, the resources (both human and financial) of the participants must be coordinated to insure cost-effective results.

EPCAMR and WPCAMR assisted in the development of the PA Comprehensive Plan for Abandoned Mine Reclamation. EPCAMR and WPCAMR have served as the local liaison for the Commonwealth of PA for more than 20 years in WPCAMR's case, and for more than 14 years, in the case of my organization. I was previously employed by the PA DEP Bureau of Abandoned Mine Reclamation's Wilkes-Barre Office in the Northeast Region as a Science Intern in 1993 and as a Hydrogeological Intern for the Hawk Run District Mining Office in Western PA, now the Moshannon District Mining Office, in 1994 and 1995, prior to graduating from Penn-State.

The following set of principles guides this decision making process:

- Partnerships between DEP, EPCAMR, WPCAMR, watershed associations, local governments, environmental groups, other state agencies, federal agencies, & other groups organized to reclaim abandoned mine lands are essential to achieving reclamation & abating acid mine drainage in an efficient & effective manner.
- Partnerships between AML interests and active mine operators are important and essential in reclaiming abandoned mine lands.
- Preferential consideration for the development of AML reclamation or AMD abatement projects will be given to watersheds or areas for which there is an approved rehabilitation plan.
- Preferential consideration for the use of designated reclamation monies will be given to projects that have obtained other sources or means to partially fund the project or to projects that need the funds to match other sources of funds.
- Preferential consideration for the use of available monies from federal and other sources will be given to projects where there are institutional arrangements for any necessary long-term operation and maintenance costs.
- Preferential consideration for the use of available monies from federal and other sources will be given to projects that have the greatest worth.
- Preferential consideration for the development of AML projects will be given to AML problems that impact people over those that impact property.
- No plan is an absolute; occasional deviations are to be expected.

Since 2000, new approaches to mine reclamation and mine drainage remediation have been explored and projects funded to address problems in innovative ways. EPCAMR has been an instrumental partner in the development of these new approaches. EPCAMR co-coordinates State-wide Conferences on Abandoned Mine Reclamation with its' sister organization, WPCAMR, and a Planning Committee made up of State-wide regional non-profits, State representatives, Foundation representatives, and Colleges and Universities to network and exchange ideas on these new approaches and innovative AMD Treatment technologies. See our websites at (www.epcamr.org, www.amrclearinghouse.org and www.treatminewater.com).

These include: Awards of grants for: (1) proposals with economic development or industrial application as their primary goal and which rely on recycled mine water and/or a site that has been made suitable for the location of a facility through the elimination of existing Priority 1 or 2 hazards; and (2) new and innovative mine drainage treatment technologies that provide waters of higher purity that may be needed by a particular industry at costs below conventional treatment in common use today or that reduce the costs of water treatment below those of conventional lime treatment plants.

Projects using water from mine pools in an innovative fashion, such as the Shannopin Deep Mine Pool (in southwestern Pennsylvania), the Barnes & Tucker Deep Mine Pool (the Susquehanna River Basin into the Upper West Branch Susquehanna River), EPCAMR's Mine Pool Mapping Project and Groundwater Modeling for the Western & Southern Anthracite Coal Fields) and the Wadesville Deep Mine Pool (Exelon Generation in Schuylkill County) have also been funded.

Current and Future Reclamation Efforts in the Watershed

EPCAMR agrees that while numerous remediation projects have already been completed and others are underway, it will take decades at current funding levels until the entire problem areas in the Chesapeake Bay watershed are addressed. EPCAMR thinks that Pennsylvania should place an even higher priority on efforts throughout the entire Chesapeake Bay watershed, particularly in the Anthracite Coal Region. If the Chesapeake Bay Tributary Strategy is to be effective, than funding needs to be provided to projects in the tributaries. In addition to the problems associated with the water quality itself, tremendous amounts of recreation and tourism dollars have been lost in the watershed due to the mining impacts. EPCAMR feels that additional funding should be provided to community groups under the State's Set-Aside Program to conduct the necessary watershed assessments to make them eligible for the Title IV Funding that is currently being held in an interest bearing account while a re-prioritization of the criteria to become eligible for the funding is finalized.

Tracking and Reporting Protocols

EPCAMR's RAMLIS GIS Tool (http://epcamr.org/index.php?name=Content&pa=showpage&pid=81) can also provide reports that can be developed that present data about the number of active mining permits and the overall disturbed area associated with these permits. EPCAMR uses (lat/long) coordinates to locate projects, however, the projections of our data are not tied to the NHD on the larger national scale, it is very localized and layered based on much smaller watershed units within the Chesapeake Bay Watershed, that we believe gives it a more accurate reflection of the data and leaves less room for error. AML is also tracked in our RAMLIS GIS Tool and is updated by EPCAMR and its community partners, in addition to information provided by the Commonwealth's Bureau of Abandoned Mine Reclamation. EPCAMR has the ability to statistically summarize the percentage of problem areas reclaimed in a watershed area, municipal boundary, legislative district, and the PA portion of the Chesapeake Bay. Stream miles restored can also be provided as well as water quality analyses. Much of our current work right now is in developing the Anthracite Region AMD Remediation Strategy with the SRBC.

Mining Stormwater General Permit

EPCAMR supports the PA DEP in developing a stormwater NPDES General Permit (GP) for mining activities. The intent of this permit should be to manage stormwater from mine sites where the hydrologic impact is limited to surface water. The GP requires the use of BMPs to manage stormwater to prevent sedimentation. It is anticipated that this GP will be finalized during the summer of 2010. However, again, it must be stated that the encouragement of infiltration into stormwater detention basins that are unlined on abandoned mine lands only encourage surface infiltration of runoff into the deeper mine pool complexes and local underground groundwater reservoirs. The PA DEP should consider looking into the underground effects of infiltration of stormwater runoff from abandoned mine sites (http://www.stormwaterresourcesformunicipalities.com/).

Oil and Gas Development

While oil and gas development activities are not subject to NPDES permitting, EPCAMR understands and is aware that the PA DEP has in place an Erosion and Sedimentation Control General Permit (ESCGP-1). In response to the EPA's rulemaking and the effect of the federal Energy Policy Act of 2005, DEP issued the ESCGP-1 for oil and gas activities that disturb 5 acres or greater at one time over the life of the project. This permit applies to earth disturbance activities for oil and gas exploration, production, processing, treatment operations or transmission facilities (oil and gas industry). The added protection gained through this permit will ensure that proper best management practices (BMPs) will be planned, implemented and maintained for erosion and sediment control and postconstruction stormwater runoff from these activities. In addition, this approach is an incentive for the operator to minimize the disturbed area and restore the area promptly after completion of the well or installation of the pipeline. However, this does not deal with subsurface potential for contamination or underground mine pool complexes and the effects the project may have on AMD discharges that are not located at the site of the project location.

Riparian Forest Buffer Guidance

In 2009, the Department published the draft Riparian Forest Buffer Guidance, Commonwealth of Pennsylvania, Department of Environmental Protection, Document # 395-5600-001 (2009), as amended and updated. The guidance lists various design, construction, and maintenance standards for developing a riparian forest buffer.

If initial WIP results indicate that a change in this approach is warranted, these funds can be targeted to specific locations and to specific BMPs. PA DEP could also target the specific BMPs identified by EPA Region III as their most critical for Bay model loadings. One of the five BMPs, which track closely to those that have been given priority in the effort, is: riparian buffers. Riparian buffers can still be implemented and planted along many of our rivers and streams in the Coal Region to reduce the overall sedimentation loads to the watershed and can be mapped by EPCAMR based on our RAMLIS GIS tool in relation to those abandoned mine lands that are adjacent to rivers and streams and have problem areas where sedimentation is prevalent and continues to downcut, undercut, and erode the culm banks.

A good example would be along the Lackawanna River in Lackawanna County, where acres of culm banks lay along the streambank of the Lackawanna River and during storm events and flooding events, slough off into the River and the sediments are carried downstream. Increased volume of stormwater

runoff results in an increase in the frequency of bank full or near bank full flow conditions in stream channels. The increased presence of high flow conditions in riparian sections has a detrimental effect on stream shaping, including stream channel and overall stream morphology. Stream bank erosion is greatly accelerated. As banks are eroded and undercut and as stream channels are gouged and straightened, meanders, pools, riffles, and other essential elements of habitat are lost or greatly diminished.

Laws, Regulations, Funding, Staffing and Technical Capacity

EPCAMR supports the increase in funding to support and fund the Pennsylvania Department of Environmental Protection, Department of Agriculture, County Conservation Districts, organizations such as ours, and Critical Programs such as Growing Greener and Clean Water Act, Section 319 so as to assure robust levels of personnel to provide outreach, technical assistance and cost-share funding in the implementation of necessary BMPs and to assure, where applicable, compliance inspections and enforcement of all existing regulations are being adhered to. EPCAMR works to reclaim abandoned mine land and watersheds impacted by abandoned mine drainage throughout the North Central Bituminous Region and Anthracite Coal Region of Northeastern PA, in partnership with our sponsoring Conservation Districts. Conservation Districts sustain, protect and restore the natural resources for the Commonwealth of Pennsylvania. EPCAMR supports Conservation Districts within the EPCAMR Region who are seeking dedicated sources of funding to provide 50% cost share for basic staff positions and cost-of-living increases to meet their goals. One possible source of dedicated funding for all Conservation Districts is through a severance tax in Pennsylvania for extraction of oil and gas deposits. Although Pennsylvania has never initiated a severance tax, many other states in the country have established this type of tax to fund various budgetary items. For instance, Oklahoma has a gross production tax on oil, a small portion of which is earmarked for natural resource protection. Wyoming has a severance tax that subsidizes their state's general fund, thus indirectly partially funding Conservation District activities.

EPCAMR also supports a portion of any severance tax for the Environmental Stewardship Fund, which has funded many "Growing Greener" grant projects that EPCAMR has been awarded in the past or where EPCAMR has been a partner. Funding for our organization and our sister organization (WPCAMR) is also vital to continue the reclamation of abandoned mine lands, remediation of streams and rivers impacted by abandoned mine drainage (AMD), and to further the economic redevelopment potential of the reuse of underground abandoned mine pools throughout PA. Only $6 Million is anticipated to be allocated state-wide in the most recent round of Growing Greener for watershed restoration projects. EPCAMR firmly believes that a small, predictable portion of any state mandated severance tax should be allocated directly to the Conservation District Fund to help all Conservation Districts across the state maintain their environmental protection programs. Using a natural gas severance tax of 5% on the value of the natural gas at the wellhead, plus 4.7 cents per 1,000 cubic feet of natural gas taken from the ground, $178.6 million would be generated in the 2010-2011 fiscal year and increase to $475.6 million by 2014-2015. We recommend 3% of the severance tax, or approximately $5.358 million in the 2010-2011 fiscal year, be dedicated to the Conservation District Fund.
By the 2014-2015 fiscal year as the severance tax revenue grows, approximately $14.3 million would be generated for the Conservation District Fund. Obviously this type of dedicated funding would resolve many of the financial challenges our Conservation Districts collectively face on a daily basis.

EPCAMR is also in need of additional administrative funds that can be found through grant funds under the Environmental Stewardship Fund. We are in a position as a regional non-profit environmental organization, founded by Eastern PA Conservation Districts and other reclamation related partners and watershed groups that has been providing technical assistance, grant writing assistance, project coordination, project management, grant administration, Geographic Information System mapping assistance, research on AMD Treatment technologies, innovative AMD Treatment Design and Construction, environmental education, and the continued building of diverse partnerships and leveraged funds to reclaim our Commonwealth's abandoned mines and watersheds impacted by AMD. For more nearly 15 years, EPCAMR has been providing support to our Conservation Districts, watershed organizations, and local governments within the EPCAMR Region on abandoned mine reclamation issues, environmental education, and watershed improvement projects.

It is undisputed that EPCAMR and Conservation Districts provide much needed services to Commonwealth citizens to help them identify and resolve critical natural resource concerns. EPCAMR and Conservation Districts deliver essential services that protect our soil, water and air for a reasonable cost. Since there is a direct link between the removal of natural resources and natural resource protection activities, it makes sense to consider advocating a portion of a severance tax for natural resource protection activities. A severance tax, a portion of which would be dedicated to the Conservation District Fund and to the Environmental Stewardship Fund should be enacted. We do not underestimate the power on a local level of other regional non-profits, nor do we claim that we are the only organizations that can provide some assistance to the PA DEP and the US EPA. We just want to make the Commonwealth and the US EPA Region III know that our organization would like to have an integral relationship in the protection and restoration of the Chesapeake Bay Watershed and that we have been supporting such efforts for nearly 15 years. We do not have all the answers either, but we are part of the solution.

Urban and Rural Reforestation

The two additional DCNR-based programs that promote reforestation of urban and rural parts of the Bay Watershed, TreeVitalize could be promoted more widely to our community groups and watershed associations in the mining impacted areas to assist with the replanting of riparian buffers along our rivers and streams where culm banks are a part of the landscape in the urban and rural settings. This program is not often promoted to these organizations. The Scranton—Wilkes-Barre Area, Pottsville, Shamokin, Mt. Carmel, Hazleton Area, are all urban communities that this Program could be expanded into. EPCAMR would be willing to promote it within these communities to our partners.

Riparian Forest Buffer Initiative

EPCAMR in the past had played an important role in implementing small riparian forest buffers along stream channels that had been recently reclaimed through the construction of rip rap channels to control overland flows off of the reclaimed mine sites. In 2005, Plymouth Township, Luzerne County, we were able to plant willow sheens, native shrubs, viburnum, and other wetland plants donated by the Octoraro Nursery in partnership with the Chesapeake Bay Foundation, Alliance for the Chesapeake Bay, and the Plymouth Township Planning Commission along a 1500' section of an unnamed tributary to the Susquehanna River that we called Sickler Run, locally. It is anticipated that more of these riparian buffer

projects can be completed to add to the Stream ReLeaf, or Riparian Forest Buffer database in years to come.

Appalachian Regional Reforestation Initiative

The Appalachian Regional Reforestation Initiative (ARRI), a federal partnership program that supports planting trees for water quality, is a coalition of citizens, non-profit groups, the federal Office of Surface Mining (OSM), and states who are dedicated to restoring forests on coal mined lands in the Eastern United States. GIS analysis indicates that there are 120,000 acres of abandoned mine lands within the Upper Susquehanna--Lackawanna River Basins. These lands represent a great opportunity to expand forest cover within the Bay watershed while reintroducing native trees to the region. The restoration has already begun. EPCAMR, SRBC, Earth Conservancy, and the Lackawanna River Corridor already have existing relationships with many landowners, community watershed organizations, regional non-profits, and coal operators in this Region. EPCAMR is also already an ARRI partner and has signed its Statement of Mutual Intent. EPCAMR is very supportive of The American Chestnut Foundation and its mission to help restore the American Chestnut propagation back into our landscape, including on abandoned mine lands.

Many of the forested acres are managed with best management practices are not currently recognized or counted in the Chesapeake Bay model either and should be added to the mix. EPCAMR believes that every tree planted on an abandoned mine site, be it by the private coal mining industry, or volunteers, or through ARRI should be counted for consideration as an innovative approach to sequester carbon. Trees are growing on these sites over the years as a part of the reclamation plan and are providing additional root zones to fixate nitrogen and to trap CO_2. Some of the Pennsylvania Game Commission's 1.04 million acres of forestland in the Bay watershed, are all well-managed and follow multiple best management practices, and do include some abandoned mine lands that can fall under the ARRI Initiative. Even reclamation mixes of grasses, legumes, and other ground-cover vegetation plant species are reducing the runoff from abandoned mine sites following the reclamation phase of mining. Vegetated reclamation sites should also be included in the Chesapeake Bay Model under number of reclaimed acres.

Remediation of Acid Mine Drainage Sites

EPCAMR agrees that remediation of abandoned mine drainage (AMD) sites in forested areas represents an opportunity for increased biological activity and algal uptake of nutrients and should be accounted for as reductions to the forest load in the Chesapeake Bay model. A study completed by Stroud Water Research Center showed that "despite near-neutral pH in the AMD-impacted stream (Lorberry Creek), iron hydroxide deposition interferes with normal periphyton colonization and enzyme activities". Rattling Run, an Exceptional Value stream in the Anthracite region, had chlorophyll-a levels nearly fifteen times greater than Lorberry Creek. Stroud also stated that the "most important implication of these findings is that, although water chemistry in a stream might be technically within a range that can sustain aquatic life (i.e. circumneutral pH and low dissolved metals concentrations), metal deposition on substrata clearly inhibits microbial colonization and severely limits phosphorus availability to aquatic bacteria, fungi, and algae." EPCAMR has numerous other project locations within the Anthracite Region that concur with the Stroud Water Research Center's example. For example, here in Luzerne County, many of the tributary streams impacted by AMD are circum-neutral with a pH of 6-6.5, are more

alkaline than acidic, often have high sulfate concentrations, Total suspended solids, area large volume flows, and have heavy loadings of suspended iron that are severely coating the bottoms of the stream channels for miles until reaching the Susquehanna River. This iron hydroxide coating, prevents the aquatic populations from reproducing in these areas, leaving them with little biological diversity and stagnant. However, if additional AMD treatment systems are designed and constructed, the metal loadings can be reduced through the use of artificially constructed wetland systems, specifically constructed for the removal of the iron loadings that will reduce the overall iron loadings to the Susquehanna River and eventually the Chesapeake Bay. EPCAMR has even found several ways to recycle, harvest, dry, and re-use the iron hydroxide from these treatment systems to help fund its environmental education programs in the Region.

We've been doing this for nearly a decade. See our link at (http://epcamr.org/storage/EnvEdBrochure2010.pdf). EPCAMR has had the iron hydroxide tested for pigment quality and it is very high in a number of discharges within the Chesapeake Bay, upwards in the range of 92-98% pure iron oxide, once dried. EPCAMR makes its own wood stains for public recreational and trail projects, iron oxide chalk programs in schools, AMD Tie Dye Workshops, Art Shows with various regional Art Leagues, mixes its own paint, and has sold it to over 10 states to community groups interested in utilizing it for similar projects that we've initiated in PA. See our link (http://epcamr.org/storage/iron_oxide_recovery_pamphlet2.pdf).

There are many uses for iron oxide in the United States and worldwide. The current markets for low-grade iron oxides in the United States alone is approximately 175,000 tons per year (*1995 estimate; Hedin Environmental SBIR research*), while the current world market for a similar grade product is approximately 850,000 tons per year. The typical revenue from this quality of material is approximately $0.10 - 0.75/lb (Hoover Color; Bayferrox Corp). Higher value "specialty" iron oxide products are typically used in the animal vitamin supplement or cosmetics markets and have a higher associated economic value, as much as $3.00 - 4.00/lb. EPCAMR has been able to sell the iron oxide that we process in-house in 5 gallon buckets collected by ourselves or seasonal interns and dried in a small soil oven, big enough to make 4 batches of cookies for $5.00/oz. and it still does not cover the costs of our time to get it to the final form to get it to market. However, we are utilizing the iron oxide to support our educational programs and not for a profit. These load reductions in terms of pounds of iron oxide removed from the AMD treatment systems should also be included in the Chesapeake Bay Model.

EPCAMR totally agrees with the logic presented by the Stroud Water Research Center that the nutrients (especially phosphorus) being transported to Chesapeake Bay associated with metal hydroxide-based sediments, to which dissolved phosphorus has a strong affinity, could be reduced through remediation of the mined site and restoration of aquatic life to the stream. Similarly, even though the nitrogen species do not have the same affinity for sediments as the dissolved phosphorus, nitrogen uptake within the watershed by the benthic algae would decrease that available to be delivered to Chesapeake Bay. EPCAMR agrees that these reductions should be credited to the forested areas because the load was probably attributed to forest in the original modeling as the calibration gages are downstream of primarily forested sites.

However, EPCAMR does feel that not only should there be an emphasis on the restoration of the publicly owned lands, but in the urban environments, where the larger number of communities and population centers are being directly affected by the AMD pollution problem. Funding spent in these areas where there is a much higher incidence of local traffic by the local community would not only

benefit them in achieving a higher quality of life, but it could lead to an increase in personal property values, increased recreational opportunities like swimming and fishing, economic redevelopment opportunities, conversion of abandoned mine lands into recreational spaces like trails constructed by the Earth Conservancy and others, an increase in water quality and improved aquatic stream health, and an increase in the number of visits to their local places as opposed to having to drive much further to State Parks and State Game Land areas during economic hard times.

EPCAMR Staff worked and participated with The American Chestnut Foundation, the Pennsylvania Game Commission, OSM's Patrick Angel, other OSM staff, volunteers from the OSM/VISTA Appalachian Coal Country Watershed Team, Schuylkill County Conservation District, and the Schuylkill Headwaters Association community volunteers to planted the 2,500 trees on an abandoned mine land site in Schuylkill County in 2009 in partnership with a local Anthracite Coal Company Operator. The ACCWT is a national team of AmeriCorps VISTA volunteers supported by the Corporation for National Service, the Office of Surface Mining, and local sponsors, such as EPCAMR and the Anthracite Heritage Alliance. They are providing much needed additional on the ground support to groups like EPCAMR, Schuylkill Headwaters Association, Schuylkill County Conservation District, and other community groups. See more details on the ACCWT Team on (www.accwt.org).

EPCAMR understands that without clean water, land, and water, the social, recreational, economic, and environmental vitality of the Commonwealth and in the Chesapeake Bay Watershed, our children will be severely disadvantaged for future generations. PA DEP and the US EPA should continue to be the true leader in the continuing efforts to research and implement remediation and reclamation techniques on abandoned mine lands and the other environmental issues that have plagued the Bay for decades. Not all decisions are best made at the Federal level or State level through regulations and compliance.

EPCAMR believes that given the adequate amount of funding, expertise, engineering assistance, technical assistance, and guidance from the Commonwealth, groups like ours and other community groups and municipalities at the local level CAN effectively and HAVE implemented many of the ideas presented or suggested in this public comment document. Too many stream miles have been on the Federal List of Impaired Waters due to AMD for as long as I have been the Executive Director for EPCAMR, and slowly some of them are being removed due to the hard work and efforts of community volunteers, watershed organizations, and assistance from various State, Federal, County, and Local level partners. Additional funding has to find a way down to the local level for implementation. Other states should follow our lead. Let's Change the Chesapeake! While I firmly believe the motto that "We All Live Downstream", I also believe that we need to lead by example and take care of PA's watersheds first.

Article I, Section 27 of the Pennsylvania Constitution provides as follows:

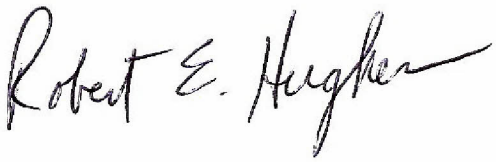
> Sec. 27. Natural Resources and the Public Estate
>
> ***The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these***

resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.

This amendment, which was adopted in 1972, encompasses two basic principles. First, Pennsylvanians have a right to a decent environment, and second, Pennsylvania government has a trusteeship responsibility to protect that environment on behalf of future generations. EPCAMR is doing its part to uphold these Constitutional principles. As a public citizen, community leader, and active community volunteer, speaking on behalf of other Coalfield residents, I feel that I have done my part and continue to do so by actively contributing in this democratic public participation process of having my voice heard.

Sincerely,

Respectfully submitted,



Robert E. Hughes
EPCAMR Executive Director

CC: EPCAMR Region Congressmen, State Representatives, and Senators within the Chesapeake Bay Watershed
EPCAMR Board of Directors
Chesapeake Bay Foundation
Alliance for the Chesapeake Bay
Susquehanna River Basin Commission
Lackawanna River Corridor Association
Sustainable Chesapeake-The Conservation Fund
Burke Environmental Associates
PA DEP Office of Policy and Communications
PA DEP Section 319 Program
PA DEP Bureau of Abandoned Mine Reclamation
PA DEP Bureau of District Mining Operations-Pottsville & Moshannon Office
Pocono NE RC & DC
Capital Area RC & DC
PA Mining & Reclamation Advisory Board
PA DCNR Bureau of Forestry
PA Citizens Advisory Council
PA Environmental Council
PA Anthracite Council
PennFuture
Office of Surface Mining-Harrisburg Office
State Conservation Commission
Appalachian Coal Country Watershed Team
Earth Conservancy
National Trout Unlimited
Appalachian Region Reforestation Initiative (ARRI)
ARIPPA
WPCAMR